



Jefferson Lab Facilities and Infrastructure

Jefferson Lab Site Orientation February 23, 2005



SEB Presentation



Outline

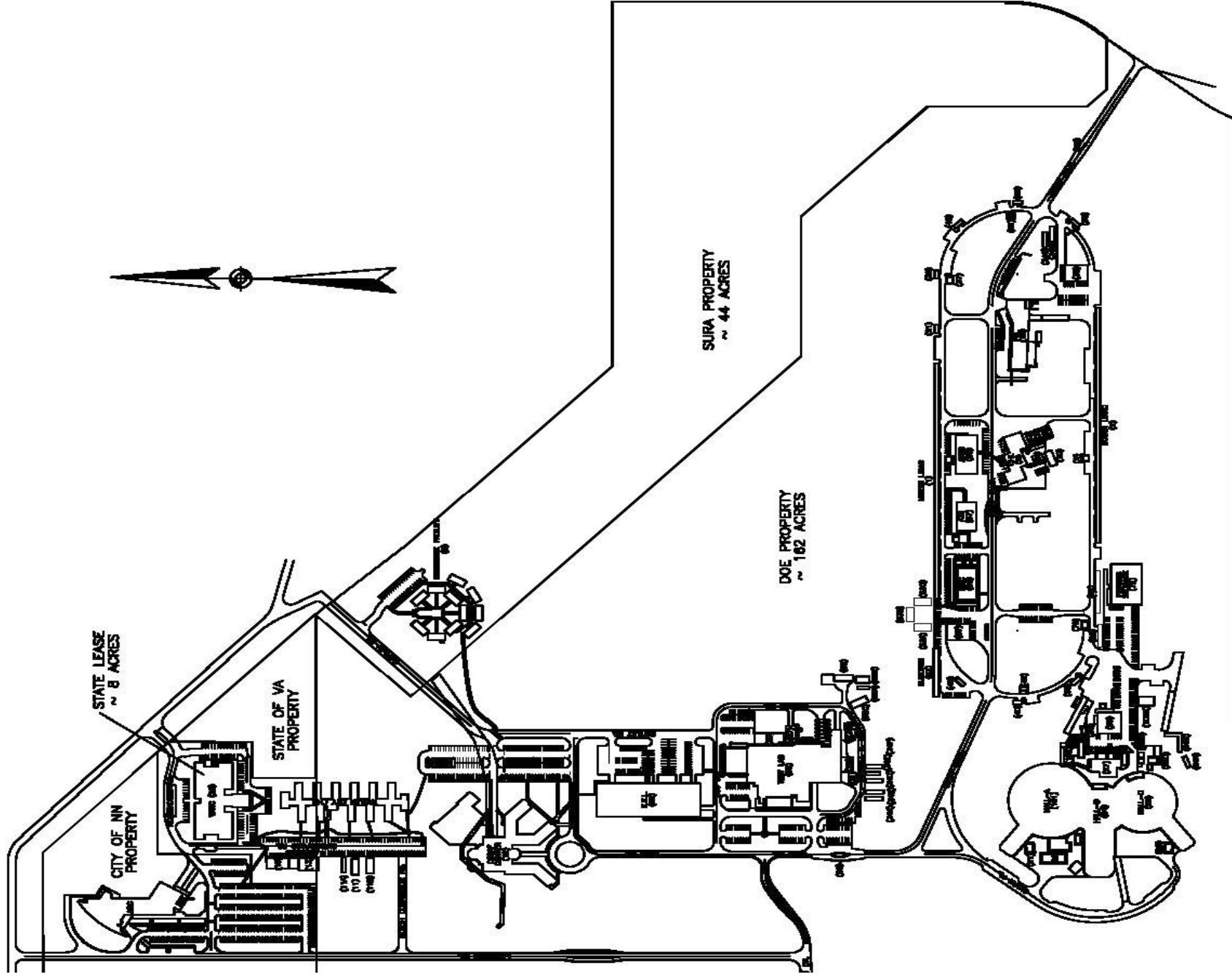
- **Description**
 - Land & Facilities
 - Utilities
- **Outlook/Opportunities**
- **Resource Needs**
- **Summary**



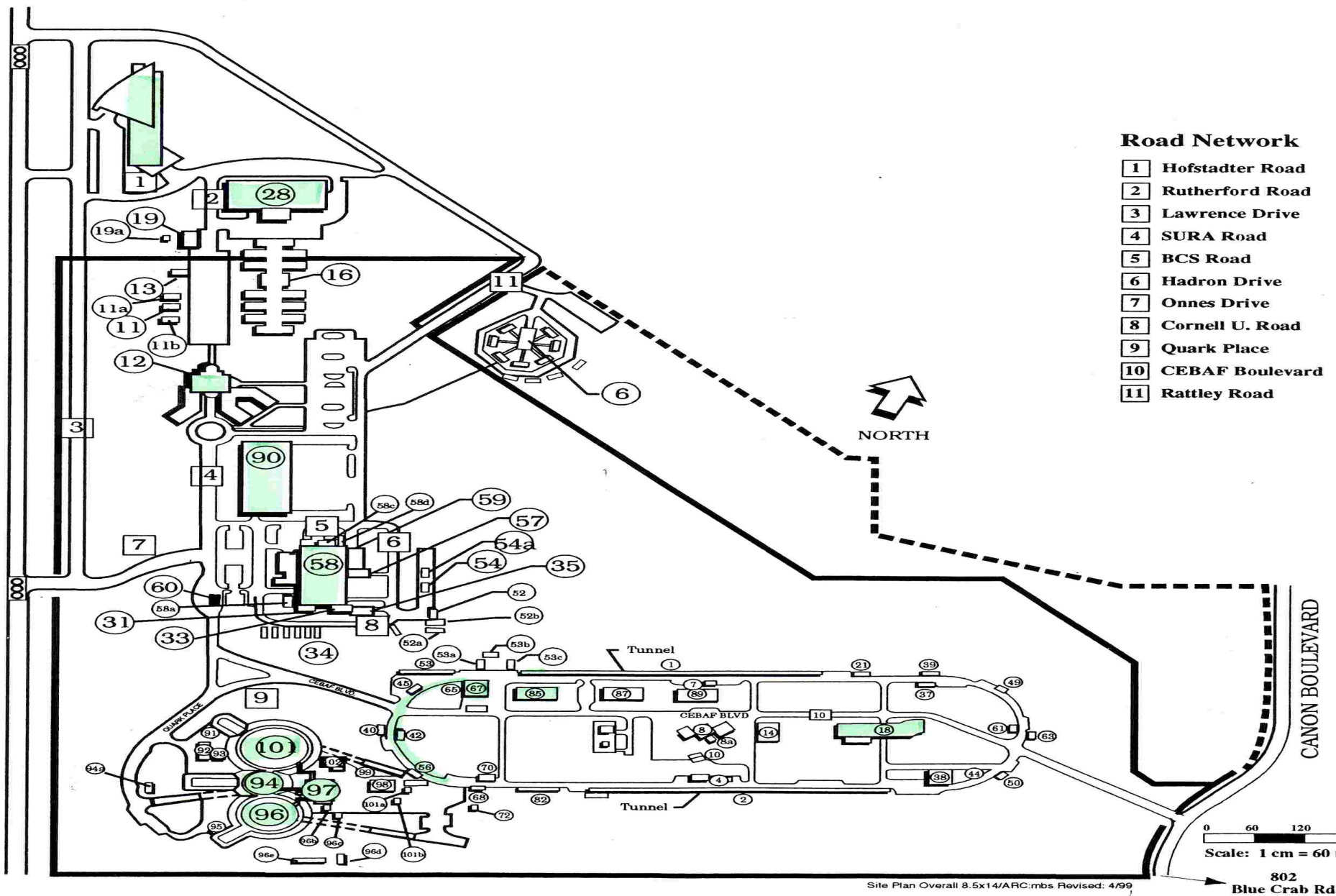
Description

- **Land and Facilities:**
- **160 Acres DOE Owned**
- **Site established in 1987**
- **FY 04 End-of-Year Staff 698 (regular, part-time, casual/student) plus**
 - **12 DOE (including DOE support contractor)**
 - **11 State Employees**
 - **31 Subcontractors**
- **200 Users average on-site**
- **Test Lab (1964) and VARC (1965) predate CEBAF**
- **CEBAF Center Addition in Process (\$10.96M; 62,000 SF)**
- **Replacement Value of Convention Facilities and Utilities is \$206M**
- **Total Square Footage of Facilities is 764,616**





JEFFERSON AVENUE





CEBAF Center Addition Rendition



Lab Space Distribution (Oct 2004)

| GSA Use Code | Description | Owned – Gross SF | | | | Leased – Gross SF | Total SF |
|--------------------|---------------------------|------------------|------------------------------|----------------------------------|-------------------------|-------------------------|-------------|
| | | Building | Real Property Trailers | Personal Property Trailers | OSF Category 3000 | Building | |
| 10 | Administration | 66,277 | 41,901 | | | 79,081 | 187,259 |
| 20 | School | | 1,327 | | | | 1,327 |
| 40 | Storage | 25,810 | 660 | 21,744 | | 11,558 | 59,772 |
| 50 | Industrial Bldgs | 7,235 | | | | | 7,235 |
| 60 | Service Bldgs | 4,373 | 3,518 | | | 2,904 | 10,795 |
| 70 | Research & Development | 303,118 | 1,940 | | 192,792 | | 497,850 |
| 80 | Other | 378 | | | | | 378 |
| Total | | 407,191 | 49,346 | 21,744 | 192,792 | 93,543 | 764,616 |



Current Leases

| Name | Use | SF | # Employees | Future Plans |
|---------------|-----------------------------|--------|-------------|-------------------------------------------------------------------------------------------------------------------|
| ARC Building | Office & Lab | 44,342 | 156 | Base lease expires FY08, extend lease until CEBAF Center Addition Phase 2 is funded |
| VARC | Office | 34,739 | 75 | Lease cost \$1 per year; Lab is responsible for all operating and improvement costs. Continue to use indefinitely |
| Forestry | Office and Maintenance Shop | 2,904 | 7 | Lease cost \$1 per year; Lab is responsible for all operating and improvement costs. Continue to use indefinitely |
| Middle Ground | Warehouse | 4,478 | None | Terminate lease upon completion of on site storage |
| Blue Crab | Warehouse | 7,000 | None | Continue until onsite facilities are funded. |

Replacement Plant Value

| FIMS Asset Type | 2004 RPV | 2003 RPV | % Difference | Comment |
|----------------------------|---------------|---------------|--------------|---------|
| DOE Buildings | \$87,124,358 | \$83,963,514 | 3.76% | |
| Real Property Trailers | \$4,840,031 | \$2,922,547 | 65.61% | 1 |
| Personal Property Trailers | \$573,175 | \$519,788 | 10.27% | 2 |
| OSFs (3000 Category) | \$95,267,906 | \$91,868,762 | 3.70% | |
| OSFs (non -3000 Category) | \$17,909,536 | \$13,910,811 | 28.75% | 3 |
| TOTAL | \$205,715,006 | \$193,185,422 | 6.49% | |

Comments:

1. Using the FIMS Model, the square foot value increased from \$51.29 to \$98.08. Last year, Trailer City was a contractor generated value of \$83.57 per square foot.
2. Using the FIMS Model, the square foot value increased from \$23.20 to \$27.31.
3. Many 2003 values were construction costs only and did not include the Site Factor costs, which were added in the 2004 values.



Deferred Maintenance (FY 2004)

| Category | 2004 Deferred Maintenance (DM), \$M | 2004 Asset Condition Index | 2004 Rehab & Improvement Cost (RIC), \$M |
|-----------------------------------------------------|----------------------------------------------|-------------------------------------|------------------------------------------------------|
| Buildings | | | |
| - DOE Owned | \$3.20 | .96 | \$35.68 |
| - State Owned | \$.41 | .94 | \$.03 |
| Real Property Trailers | \$4.80 | .01 | \$0 |
| Personal Property Trailers | \$.55 | .04 | \$0 |
| OSF – 3000 Category | \$.29 | 1.00 | \$.27 |
| OSF – Non 3000 Category (Utilities, Roads, etc.) | \$1.31 | .93 | \$7.42 |
| Total | \$10.56 | .95 | \$43.40 |

Breakdown of Average Indirect Funded Maintenance

| | |
|--------------------------------------------|-----|
| Deferred Maintenance Projects | 8% |
| Corrective Maintenance Projects | 55% |
| Preventative Maintenance Projects | 18% |
| Reconfiguration Projects (not capitalized) | 19% |



Estimated Sustainment Budget

- **Estimated FY06 – FY10 Sustainment Needs:**

| <u>Indirect</u> | <u>Need</u> | <u>Expectation</u> |
|-----------------------------------------|----------------------|---------------------------|
| • Deferred Maintenance Buildings | \$2.0M | |
| • Deferred Maintenance OSF Other | \$0.7M | |
| • Corrective Maintenance | \$6.9M | |
| • Preventative Maintenance | \$2.3M | |
| • Enhancements | <u>\$2.2M</u> | |
| | | |
| • Total Indirect | \$14.1M | \$11.9M |
| • GPP | \$12.1M | \$4.2M |
| • Line Item | \$18M | \$0 |



Age of Space

Summary Overview at TJNAF

| | |
|-------------------------------------------------------------------------------|-----------------------------------|
| Total Building Space (gross ft²) | 407,191 (9 th largest) |
| Buildings | 62 (7 th largest) |
| Largest Occupied Building (gross ft²): Test Lab (Bldg #058) | 95,828 SF |
| Trailers, number of: | 113 |
| Real Property | 43 |
| Personal Property | 70 |
| Wooden Buildings | 8 |
| Excess Facilities: | N/A |
| Uncontaminated | N/A |
| Contaminated | N/A |
| Excess Building Space Removed in FY04 | N/A |
| Replacement Plant Value (RPV): Total | \$205,146,606 |
| Programmatic (OSF 3000 category) | \$95,267,906 |
| Non - Programmatic (used for calculating Indices) | \$109,878,700 |
| Landlord Program | SC Nuclear Physics |
| Age of Buildings: Average | 13 years |
| % of space older than 40 years | 0 |
| % of space 30 years or younger | 79.10% |
| Maintenance Investment Index (MII) & Maintenance Funding | |
| FY 03 | 2.2% (\$2,252) |
| FY 04 | 3.0% (\$3,261) |
| FY 05 (estimate) | 2.1% (2,457) |
| FY 06 (estimate) | 2.0% (2,572) |
| FY 07 (estimate) | 2.0% (2,976) |
| Deferred Maintenance (DM) Trend | |
| DM 2002 | \$11,228,738 |
| DM 2003 | \$12,555,919 |
| DM 2004 | \$9,598,380 |
| DM 2005 (estimate) | \$9,900,000 |
| DM 2006 (estimate) *Decrease due to completion of CEBAF Center Addition | \$7,400,000 |
| Total Summary Condition (DM + RIC) * | \$52,969,178 |
| Deferred Maintenance (DM) | \$9,598,380 |
| Rehab and Improvement Cost (RIC) | \$43,370,798 |
| *Doesn't include personal property trailers | |
| Total Summary Condition Index (TSCI): (percent of Total RPV) * | 25.8% |
| Facility Condition Index (FCI) (based on DM) | 4.7% |
| Rehab & Improvement Cost Index (based on RIC) | 21.1% |
| ACI (Asset Condition Index from RPAM Order) (1 - FCI) | 95 (good) |
| AUI (Asset Utilization Index from RPAM Order) | 1.0 (excellent) |
| Leased assets: | |
| Square footage: Total | 93,543 sf |
| Office | 63,681 sf |
| Other | 29,862 sf |
| Annual Lease Costs | \$649,336 |



Utilities

- **Electric Power Provided by Virginia Dominion Power through Two Independent 12.47 kV Feeds**
 - 9 MVA, 34.5/12.47 Feed from Jefferson Ave. underground circuit primarily for campus buildings (originates at Warwick Substation)
 - 40 MVA 34.5/12.47 Feed from Overhead Line through Oyster Point Industrial Park (originates at Warwick Substation)
- **Natural Gas Provided by Virginia Natural Gas through 8-inch line from Jefferson Ave. used as heat in major buildings and powers emergency generators**
- **Water Provided by City of Newport News from Two 24-inch water mains along Jefferson Ave. and Cannon Boulevard to Two 12-inch taps for potable water and fire suppression at 65 psi.**
- **Sanitary Service Provided by Hampton Roads Sanitation District through a Lift Station on Jefferson Ave. at the Edge of the Site**
- **Storm Drainage is Conveyed by a Series of Vegetated Open Storm Channels and Pipe Culverts to either Canon Pond or Oyster Point Drainage Ditch both Ultimately Discharge into Big Bethel Reservoir**
- **Low Conductivity Water Cooling Provided by 9 Systems on Site Ranging in Size from 180 to 2000 gpm Using Processed Potable Water**



Emergency Generators

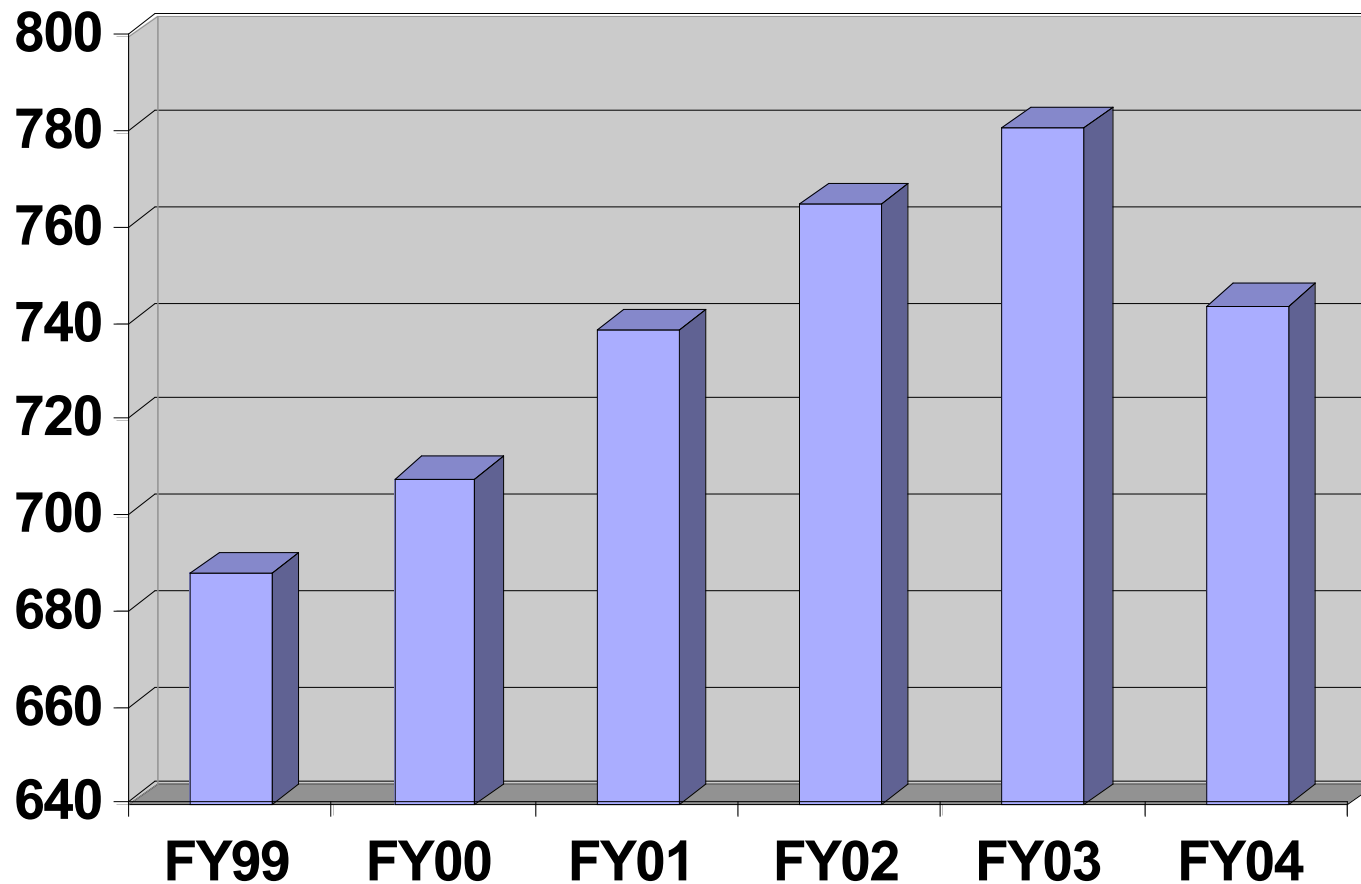
| <u>Size</u> | <u>Fuel</u> | <u>Supplies Power to:</u> |
|--------------------|--------------------|-------------------------------------|
| • 280 KW | Natural Gas | Experimental Hall Emergency Circuit |
| • 225 KW | Natural Gas | CEBAF Center |
| • 65 KW | Natural Gas | Test Lab |
| • 25 KW | Natural Gas | Bldg 87 |
| • 25 KW | Natural Gas | Hall B Vacuum Pumps |
| • 20 KW | Natural Gas | Hall B Controls |
| • 20 KW | Natural Gas | VARC |
| • 16 KW | Natural Gas | Central Helium Liquifier |
| • 12 KW | Natural Gas | Guard Shack |



Outlook/Opportunities

- **Facilities Originally Design for 4 GeV Now Supporting 6 GeV**
- **Currently Space is Inadequate for Needs (Office, Technical, and Storage)**
- **Aging Trailers are Requiring Significant Maintenance and Are In Poor Condition**
- **Free Electron Laser Program is Growing**
- **Lattice Quantum Chromodynamics (LQCD) Program is Growing**
- **12 GeV CEBAF Upgrade Project In Conceptual Design Phase**
- **Superconducting Radio Frequency Growth Desired**

Staff Trends



JEFFERSON LAB OUTYEAR STAFFING PROJECTIONS

OUTYEAR STAFFING PROJECTIONS

| | <u>FY</u> | | | | | | | | | | | |
|-------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | <u>04</u> | <u>05</u> | <u>06</u> | <u>07</u> | <u>08</u> | <u>09</u> | <u>10</u> | <u>11</u> | <u>12</u> | <u>13</u> | <u>14</u> | <u>15</u> |
| <u>Full Time Equivalent (FTEs)</u> | | | | | | | | | | | | |
| Office of Science (excluding SNS) | 494 | 496 | 509 | 606 | 647 | 647 | 622 | 552 | 552 | 552 | 552 | 552 |
| SNS | 46 | 22 | | | | | | | | | | |
| Safeguards & Security | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Other DOE | 10 | 6 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| FEL (Navy, AF, JTO) | 36 | 65 | 55 | 40 | 40 | 70 | 39 | 35 | 10 | 10 | 10 | 10 |
| Commonwealth of Virginia | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Indirect Staff | 135 | 137 | 139 | 139 | 139 | 139 | 139 | 139 | 139 | 139 | 139 | 139 |
| TOTAL STAFFING | 737 | 742 | 723 | 805 | 846 | 876 | 820 | 746 | 721 | 721 | 721 | 721 |



Resource Needs

Best Guess at Infrastructure Budget Needs FY2004 -FY2015

| (\$ in Millions) | GPP | | Line Item | Additional | |
|------------------------------|--------------|--------------------------|-------------|--------------------------|----------------|
| | GPP Projects | Projects (Non -NP Funds) | | Operating Funds Projects | (Lease to Own) |
| FY2004 Budget | 2.1 | 0 | 9.0 | 0 | |
| FY2005 Required | 2.1 | 0.3 | 0 | 0 | |
| FY2006 Required | 2.1 | 0.4 | 0 | 0 | |
| FY2007 Required | 2.1 | 1.2 | 19.0 | 0.7 | |
| FY2008 Required | 2.0 | 0 | 19.0 | 0.7 | |
| FY2009 Required | 2.0 | 0 | 0 | 0.7 | |
| FY2010 Required | 2.1 | 0 | 0 | 0.7 | |
| FY2011 Required | 3.1 | 0 | 6.0 | 0.7 | |
| FY2012 Required | 4.0 | 0 | 0 | 0.7 | |
| FY2013 Required | 3.4 | 0 | 0 | 0.7 | |
| FY2014 Required | 4.5 | 0 | 0 | 0.7 | |
| FY2015 Required | 5.0 | 0 | 0 | 0.7 | |
| Total Facilities Plan | 34.5 | 1.9 | 53.0 | 6.3 | |



Thomas Jefferson National Accelerator Facility



Summary

- **160 Acres**
- **\$206M of Facilities**
- **Most Facilities 10-15 years old**
- **Some Facilities 60s vintage**
- **Facilities Generally in Good Condition**
- **Trailers Crumbling**
- **Utilities Generally in Good Shape**
- **Drainage Work in Process**
- **Many Opportunities**
- **Budgets are Tight**

